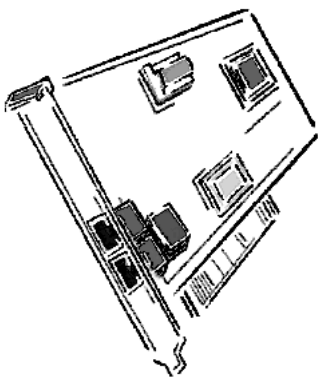
HSF
FAX / MODEM
USER'S GUIDE



Ver 1.0

CTR-21 Compliance Statement

The equipment has been approved in accordance with Council Decision 98/482/EC for pan- European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval dose not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

In the event of problems, you should contact your equipment supplier in the first instace.

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This device complies with Part 15 and 68 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and

2. this device must accept any interference received, including interference that may cause undesired operation.

FCC Warning Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 and 68 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can emit radio frequency energy and, if not installed or used in accordance with the instructions, may cause interference to radio communications. However, television reception interference can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

☞ *Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment*

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Version 1.0

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Section One - Introduction

Your new 56Kbps modem is a high speed PC communication peripheral that combines Data, Fax, Voice and Speakerphone functions into a single device. This high performance modem connects your computer to all popular modems and fax machines available today.

This manual provides installation and operating instructions for your modem. Also included in this manual are listings and descriptions of the standard **AT** command set, S-registers, and troubleshooting tips. Be certain to read ***Section Two - Installing the Modem*** thoroughly before performing the actual installation. Our customer support experience has shown that many costly and time-consuming calls can be avoided with closer attention to the installation information provided here.

1.1 Modem Compatibility

Your modem is compatible with the following standards:

- V.90 (56Kbps down stream only)
- K56 flex (56kbps download stream only)
- V.34 (33600 bps)
- V.32bis (14400 bps)
- V.32 (9600 bps)
- V.23 (1200/75 bps)
- V.22bis (2400 bps)
- V.22 (1200 bps)
- V.21 (300 bps)
- Bell 212A (1200 bps)
- Bell 103 (300 bps)
- V.17 (14400 bps FAX)
- V.29 (9600 bps FAX)
- V.27ter (4800 bps FAX)
- V.21 Channel-2 (300 bps FAX)
- V.42bis (data compression)
- V.42 (error correction)
- MNP 5 (data compression)
- MNP 2-4 (error correction)
- TIA/EIA 602 AT Command set
- V.8 Start-up sequence
- V.80(Video Ready mode)
- V.8 bis Start-up sequence
- Plug and Play PCI Spec. V1.0a
- TIA/EIA 695 Voice command
- TIA/EIA578 Class 1 Fax Command Set

Section Two - Installing The Modem

This section explains how to connect your modem to your computer.

2.1 Unpacking Your Modem

In addition to this manual, your modem package contains the following items:

- One modem
- manual include in Disc
- Modem software & driver disc
- One telephone cable

NOTE: Contact your dealer if any of the above items are missing from your package.

2.2 Modem Installation

The following steps provide instructions for installing your modem.

2.2.1 Hardware Installation

CAUTION: Before removing the cover from your computer, turn off and unplug the computer and all attached peripherals. Discharge any static electricity from your body by touching any metal surface before removing the modem from its antistatic bag.

1. Turn off and unplug your computer from the AC outlet.
2. Remove the computer's cover according to its owner's manual.
3. Select any available PCI bus slot.
4. Remove the bracket and save the screw.
5. Carefully insert the modem into the selected slot. Apply even pressure until the modem is firmly seated.
6. Secure the bracket with the screw saved earlier. Store the bracket for future use.

7. Replace the computer cover and plug in your computer. Reconnect all cables.
8. Connect the telephone able into the modem's **"LINE"** connector (see Figure 2-1). Attach the other end into the telephone wall jack.

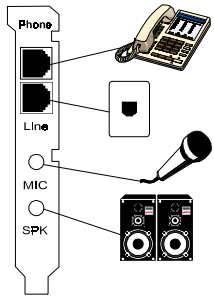


Figure 2-1

This completes the internal modem installation.

NOTE: The back of your modem should look like Figure 2-1.

2.2.2 Setting Up Modem Under Windows 98

This internal modem supports the Plug and Play feature. It allows your computer to set the optimal configuration for the modem and communication software automatically.

PART A of the installation is for **Windows 98**.

PART B of the installation is for **Windows NT 4.0** .

PART A (Windows 98)

Please follow the procedure below to install the modem driver:

1. Turn ON computer power after completing hardware installation.
2. Windows 98 will automatically detect the Plug and Play modem and setup a "**Conexant SoftK56 Data Fax RTAD PCI Modem**" or "**Conexant SoftK56 Data Fax Speakerphone PCI Modem**" message under Add New Hardware Found as shown below.

Auto detect
"PCI Communication Device"

Click " **Next**"

Add New Hardware Wizard
This wizard searches for new drivers for:
PCI Communication Device
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

select
"Search for the best driver for your device"

Click **"Next"**

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

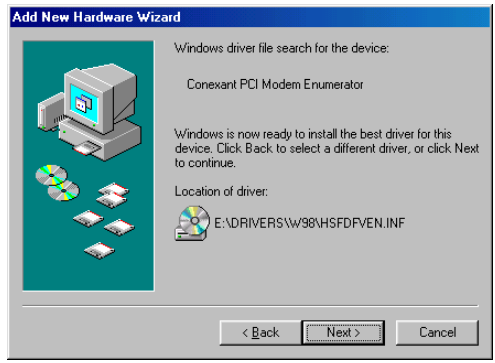
Direct to CD-ROM
(ex. F:\Drivers\W98)

Click **"Next"**

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
E:\Drivers\W98
Browse...
< Back
Next >
Cancel

search to
"Conexant PCI Modem Enumerator"

Click **"Next"**


Add New Hardware Wizard
Windows driver file search for the device:
Conexant PCI Modem Enumerator
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
E:\DRIVERS\W98\HSFDFVEN.INF
< Back
Next >
Cancel

Click **"Finish"**

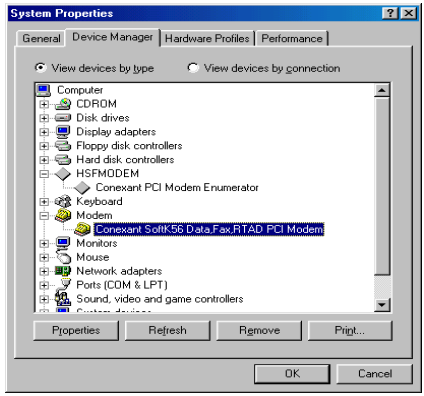
Add New Hardware Wizard
Conexant PCI Modem Enumerator
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

3. Select country (global version is necessary).

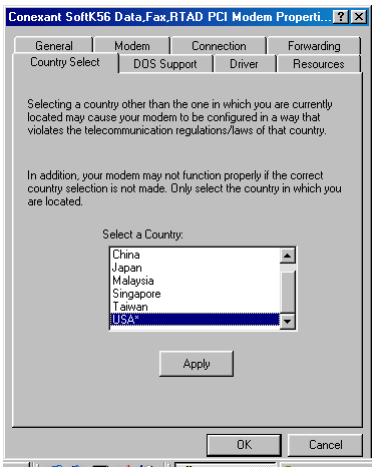
Selecting a country other than the one in which you are currently located may cause your modem to be configured in a way that violates the telecommunication regulations/laws of that country.

In addition, your modem may not function properly if the correct country selection is not made. Only select the country in which you are located.

a. Click "**Start**" ⇒ "**Settings**" ⇒ "**Control Panel**" ⇒ "**System**".



b. Click "**Country Select**" Folder . Select Your Country or Region.

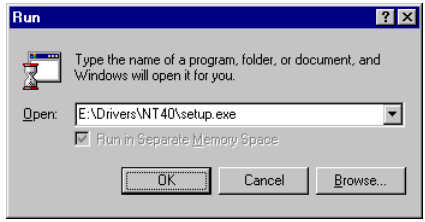

Conexant SoftK56 Data,Fax,RTAD PCI Modem Properti...
General
Modem
Connection
Forwarding
Country Select
DDS Support
Driver
Resources
Selecting a country other than the one in which you are currently located may cause your modem to be configured in a way that violates the telecommunication regulations/laws of that country.
In addition, your modem may not function properly if the correct country selection is not made. Only select the country in which you are located.
Select a Country:
China
Japan
Malaysia
Singapore
Taiwan
USA*
Apply
OK
Cancel

PART B (Windows NT 4.0)

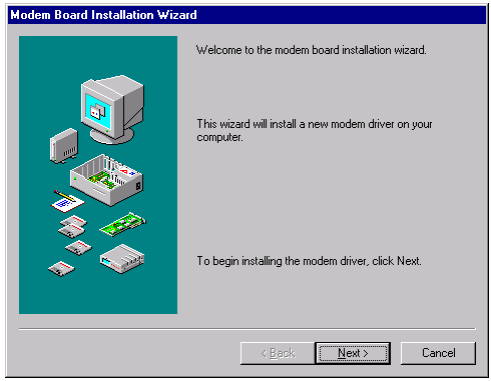
Please follow the procedure below to install the modem driver:

1. Please click "**Start** " ⇒ "**Run**"
2. choose E:\Drivers\NT40\Setup.exe (E=CD-ROM driver letter) after put the installation CD-ROM into your drive.

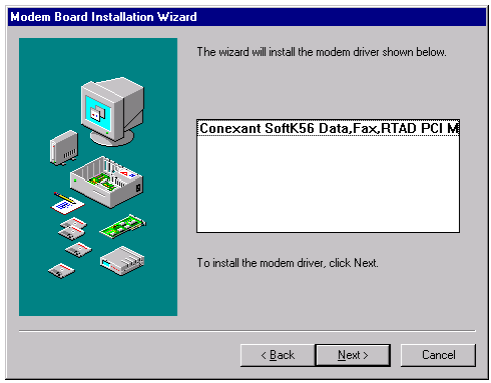
Run
"E:\Drivers\NT40\Setup.exe
Click **"OK"**

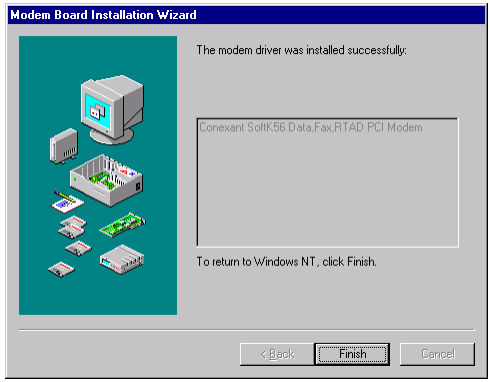


Click **"Next"**


Modem Board Installation Wizard
Welcome to the modem board installation wizard.
This wizard will install a new modem driver on your computer.
To begin installing the modem driver, click Next.
< Back
Next >
Cancel

Search to
"Conexant SoftK56 Data Fax RTAD PCI Modem"
Click **"Next"**


Modem Board Installation Wizard
The wizard will install the modem driver shown below.
Conexant SoftK56 Data,Fax,RTAD PCI M
To install the modem driver, click Next.
< Back
Next >
Cancel



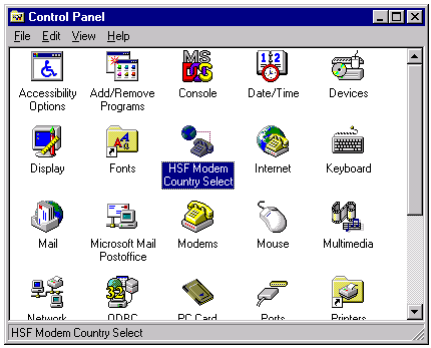
Click **"Finish"**

3. Select country (global version is necessary).

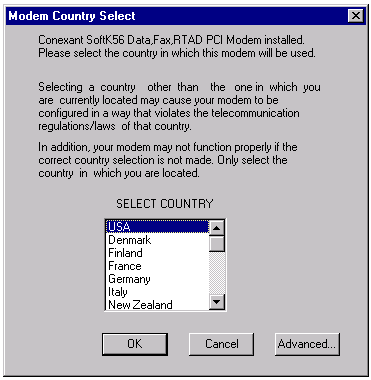
Selecting a country other than the one in which you are currently located may cause your modem to be configured in a way that violates the telecommunication regulations/laws of that country.

In addition, your modem may not function properly if the correct country selection is not made. Only select the country in which you are located.

a. Click "**Start**" ⇒ "**Settings**" ⇒ "**Control Panel**" ⇒ "**HSF Modem Country Select**".



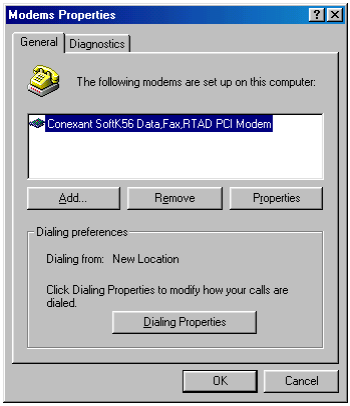
b. Select Your Country or Region.


Modem Country Select
Conexant SoftK56 Data,Fax,RTAD PCI Modem installed.
Please select the country in which this modem will be used.
Selecting a country other than the one in which you are currently located may cause your modem to be configured in a way that violates the telecommunication regulations/laws of that country.
In addition, your modem may not function properly if the correct country selection is not made. Only select the country in which you are located.
SELECT COUNTRY
USA
Denmark
Finland
France
Germany
Italy
New Zealand
OK
Cancel
Advanced...

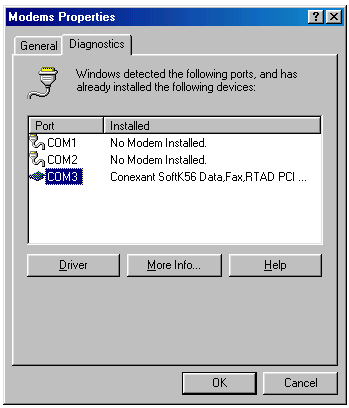
2.2.3 Checking Modem Functionality

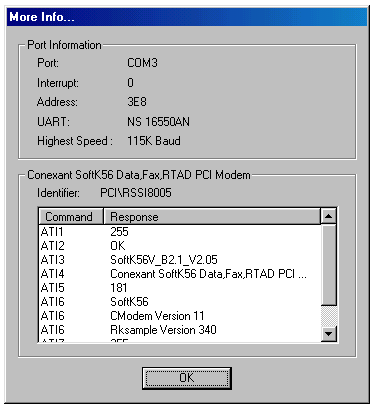
1. Start Windows 98 ⇒ Click “Start”⇒ "Settings” ⇒ “Control Panel” ⇒ “Modem”.

2. Click **“General”** and highlight **"Conexant SoftK56 Data Fax RTAD PCI Modem"** as shown below.



3. Click **"Diagnostic"** and highlight the designated COM as shown below. Click **"More Info ..."** and the system will communicate with the modem.





Click **"OK"**

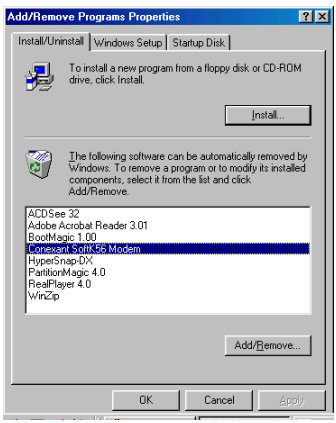
2.2.4 Uninstall Your Modem

PART A (Windows 98)

1.Click "**Start**" ⇒ "**Settings**" ⇒ "**Control Panel**" ⇒ "**Add/Remove Programs**" .

2.. highlight **"Conexant SoftK56 Modem"**

3. click **"Add/ Remove"** and **"OK"** to remove the modem.

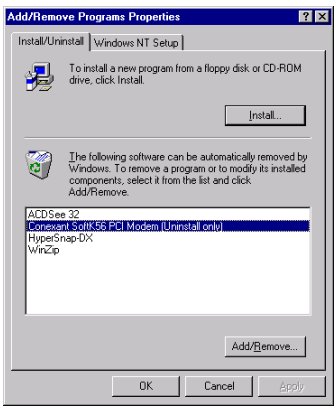


PART B(Windows NT 4.0)

1.Click "**Start**" ⇒ "**Settings**" ⇒ "**Control Panel**" ⇒ "**Add/Remove Programs**" .

2. highlight **"Conexant SoftK56 PCI Modem(Uninstall)"**

3. click **"Add/ Remove"** and **"OK"** to remove the modem.


Add/Remove Programs Properties
Install/Uninstall
Windows NT Setup
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
ACDSee 32
Conexant SoftK56 PCI Modem (Uninstall only)
HyperSnap-DX
WinZip
Add/Remove...
OK
Cancel
Apply

Section Three - Installing and Configuring Communication Software

> ***NOTE:*** Install the communication software according to the software user's manual. Be certain that your software is configured to communicate with the modem on the same COM port and IRQ line used by the modem.

You may be prompted by the software to configure certain communication parameters. We suggest the following settings:

Baud rate: 57,600 bps	Data bits: 8
Parity: None	Stop bit: 1
Flow Control: RTS/CTS	Initialization string: AT&F

The **AT** commands used by the modem are compatible with the command set used by Intel modems. Select a **Rockwell** modem type if prompted by your data communications software. Select **Generic Class 1** or **Rockwell** modem type when prompted by your Fax or Voice software.

3.1 Using Your Modem

Common modem functions (i.e. dialing, file transfer, faxing) are performed by using communication software in conjunction with the modem.

> ***NOTE:*** The communication software included with your modem provides a user friendly interface for all common modem functions and should be sufficient for all of your communication needs.

3.2 Where To Go From Here

If you have difficulties getting your modem to work, read ***Section Four*** to find information as well as answers to commonly asked questions and problems concerning the communication software. Sections Five through Ten contain reference material (**AT** commands, S-register, and Result-codes, etc.) and can be skipped.

> ***NOTE:*** It is important that you familiarize yourself with the functions available from the included software by

reading its manual (you may also use any other commercially available communication software). The software manual includes detailed information on all common modem functions.

Section Four - Troubleshooting Communication Software

Your modem is designed to provide reliable and trouble-free service. Should you experience any difficulty, however, the information contained in this section will assist you in determining and resolving the source of the difficulty. If you cannot resolve your difficulty after reading this chapter, contact your dealer or vendor for assistance.

4.1 Modem does not respond to commands.

1. Make sure the modem is not configured with a conflicting COM port and IRQ setting . If another device in your system is also configured as the same COM port, it will not work. Similarly, IRQ settings may not overlap.
2. Make sure the communication software is configured with the correct COM and IRQ settings (same COM port and IRQ line as the modem). Your communication software will not be able to send-to and receive-from your modem any data if it does not have the correct COM and IRQ settings of the modem.
3. Make sure the modem is properly initialized by the communication software. Your modem may have been improperly initialized by the software because you have selected an incorrect modem type. Select **"Rockwell"** modem type in your data communication software (select **"Generic class 1"** and **"Rockwell"** in your Fax software, respectively). You may also be prompted to enter an initialization string by the software. Use AT&F as your initialization string.

4.2 Modem dials, but does not connect.

1. Make sure the COM port setting is identical on both the system AND the software.
2. Make sure the phone line is working properly. A noisy line will prevent proper modem operation.

4.3 Modem makes a connection, but no data appears on your screen.

1. Make sure all communication parameters (baud rate, data, stop, and parity bits) are properly configured and identical on both sides. Be certain hardware flow control (RTS/CTS - default) is enabled in both the

modem and the communication software.

2. Press the **ENTER** key several times. The remote system may be waiting to receive your data before it begins.
3. Make sure the correct terminal emulation mode is being used in the software (refer to software manual).

4.4 Modem experiences errors while online with a remote modem.

1. Make sure Call Waiting is turned off.
2. Make sure RTS/CTS hardware flow control is enabled.

Do not use XON/XOFF software flow control when transferring binary

3. Make sure the data speed is not faster than your computer's capability. Operating at higher speeds under Windows 95 requires a faster CPU (Pentium 200MHz or better).

4.5 Modem exhibits poor voice record or playback.

1. Make sure the correct modem type is selected in the Voice/Fax software. Use **"Rockwell"** or similar selection. Do not select **"Cirrus Logic"** or **"Lucent"**.
2. Make sure your computer is fast enough to handle voice operations (38.4Kbps). Voice operations are CPU intensive and require a Pentium 200MHz or better CPU when running under MS Windows 95.

Section Five - AT Command Set

5.1 Executing Commands

Your modem is in Command Mode upon power-on and is ready to receive and execute **"AT"** commands. The modem remains in Command Mode until it makes a connection with a remote modem. Commands may be sent to the modem from an attached terminal or a PC running a communication program.

This modem is designed to operate at common DTE speeds ranging from 115.2Kbps (or 57.6Kbps) to 300bps. All commands and data must be issued to the modem using one of the valid DTE speeds.

5.2 Command Format

All commands must begin with the **AT** prefix, followed by the command letter and ended with the **ENTER** key. Spaces are allowed in the command string to increase command line readability, but are ignored by the modem during command execution. All commands may be typed in either upper or lower case, but not mixed. A command issued without any parameters is considered as specifying the same command with a parameter of **"0"**.

Example: **ATL[ENTER]**

This command causes your modem to lower its speaker volume.

5.3 AT Commands

All default settings are printed in **bold text.**

Command	Function
A	Answer incoming call
A/	Repeat Last command. Do not preceed A/ with
Dn	0 - 9, A-D, # and *
	L Redial last number
	P Pulse dial
	T Tone dial
	W Wait fo second dial tone
	, Pause
	@ wait for 5 seconds of silence
	! flash
	; return to command mode after dialing
	& wait for AT&T bong tone
E0	Command echo disabled
E1	**Command echo enabled**

+++	Escape characters - switch from Data Mode to Command Mode
H0	Modem on-hook (hang-up)
H1	Modem off-hook (make busy)
In	Report Identification information (n=0-7)
L0	Speaker OFF
L1	**Low speaker volume**
L2	Medium speaker volume
L3	High speaker volume
M0	Speaker always off
M1	**Speaker on until carrier detected**
M2	Speaker always on
M3	Speaker off during dialing, on until carrier detected
O0	Return to Data Mode
O1	Initiate a retrain and return to Data Mode
P	Pulse dial
Q0	**Result code enabled**
Q1	Result code disabled
Sr?	Read S-register r. Refer to Chapter 7 for details
Sr=n	Set S-register r to value n. Refer to Chapter 7 for details
T	**Tone dial**
V0	Numeric responses
V1	**Text responses**
X0	Enables CONNECT result code only. Dial tone and busy detection are disabled
X1	Same as X0 plus all CONNECT responses/blind dialing
X2	Enables all CONNECT <speed> resultcode. Dialtone detectionis enabled, but busy detection is disabled
X3	Enables all CONNECT <speed> result code. Dial tone detection is disabled. but busy detection is enabled
X4	**EnablesallCONNECT <speed> result code. Dial tone and busy detection are both enabled**
Z	Reset and recall configuration profile
&C0	Carrier detect always ON
&C1	**Turn on CD when remote carrier is present**
&D0	DTR signal ignored
&D1	Modem return to Command Mode after DTR toggle
&D2	**Modem hangs up and return to Command Mode after DTR toggle**
&F	Loadfactorydefault configuration profile
&G0	**Guard tone disabled**
&G1	Guard tone disabled
&G2	1800Hz guard tone enabled
&P0	**Set pulse dial to 39%/61% make/break**

	ratio @ 10 pps
&P1	Set pulse dial to 33%/67% make/break ratio @ 10 pps
&P2	Set pulse dial to 39%/61% make/break ratio @ 20 pps
&P3	Set pulse dial to 33%/67% make/break ratio @ 20 pps
&V	Report current configuration and stored profile
&W	Store current configuration
%E0	Line quality monitor disabled
%E1	**Line quality monitor enabled**
%L	Display line signal level
%Q	Dispaly line signal quality

5.4 V.25ter AT commands

Command	Function
+GMI	Report manufacturer ID
+GMM	Report model ID
+GMR	Report revision ID
+GSN	Report product serial number ID
+GOI	Report global object ID
+GCAP	Report complete capability list
+IFC=a,b	Set DTE-modem local flow control Parameter a specifies the local flow control from modem to DTE,where 0=Disabled 1=Enables XON/XOFF 2=Enables RTS Parameter b specifies the local flow control from DTE to modem, where 0=Disabled 1=Enables XON/XOFF 2=Enables CTS The default is +IFC=2,2
+ILRR=0	**Localportrate reporting disabled**
+ILRR=1	local port rate reporting enabled
+MS=a,b,c,d,e,f	Select Modulation Parameter a specifies the modulation protocol as B103, B212, V21, V22, V22B, V23C, V32, V32B, V34 or K56FLEX,V90 Parameter b specifies automodeoperation, where0=autoode disabled, 1=automode enabled. Parameter c specifies the lowest transmit speed for connection. Parameter d specifies the highest transmit speed

for connection.
Parameter e specifies the lowest receive speed for connection.
Parameter f specifies the highest receive speed for connection.
The default is +MS= K56, 1, 75,33600,75,56000

+MR=0 Modulation connection reporting disabled

+MR=1 Modulation connection reporting enabled

+ES=a,b,c

Select error control and synchronous access mode
Parameter a specifies the initial requested mode when modem originates a call, where
0=initiate call with direct mode
1=initiate call with normal mode
2=initiate call with V.42 without detection phase
3=initiate call with V.42 withdetection phase
4=initiate call with MNP mode
6=initiate call with V.80 synchronous access mode
Parameter b specifies the acceptable fallback mode when modem originates a call, where
0=LAPM,MNP or normal mode
2=LAPM or MNP mode
3=LAPM mode only
4=MNP mode only
Parameter c specifies the acceptable fallback mode when modem answers a call or specifies V.80 synchrounous access mode where
1=Normal mode
2=LAPM,MNP or normal mode
4=LAPM or MNP mode
5=LAPM mode only
6=MNP mode only
8=answer call with V.80 synchronous access mode
The default is +ES=3,0,2

+ER=0 Error control reporting disabled

+ER=1 Error control reporting enabled

+DS=a,b,c,d

Select data compression parameter
Parameter a specifies the desired direction of data compression, where
0=data compression disabled
1=both direction data compression enabled
Parameter b specifies whether or not the modem whether or not the modem should continue to operate if the result is not obtained, where
0=don't disconnect
Parameter c specifies the maximum number of dictionary entries.

Section Six - S Register Summary

Your modem has 16 registers, designated S0 through S89. Table 6-1 shows the registers, their functions, and their default values. Some registers can have their values changed by commands. If you use a command to change a register value, the command remains in effect until you turn off or reset your modem. Your modem then reverts to the operating characteristics specified in its nonvolatile memory. Refer to Section Five for information on how to use the AT commands to manipulate the S registers.

NOTE: The default value and range of some S-registers listed below could vary with country.

Table 6-1 S - Registers

Register	Function	Range/units	Default
S0	Auto-answer Ring	0-255 /rings	0
S1	Ring counter	0-255 /rings	0
S2	Escape code character	0-255 /ASCII	43
S3	Carriage return character	0-127 /ASCII	13
S4	Line feed character	0-127 /ASCII	10
S5	Backspace character	0-32,127 /ASCII	8
S6	Dial tone wait time	2-255 /seconds	2
S7	Remote carrier wait time	1-255 /seconds	50
S8	Comma pause time	0-255 /seconds	2
S10	Carrier loss time	1-255/0.1 second	14
S11	Touch-tone dialing speed	50-255 /milliseconds	95
S12	Escape character guard time	0-255 /0.02 second	50

Section Seven - Result Code Summary

OK	0	CONNECT	1
RING	2	NOCARRIER	3
ERROR	4	CONNECT1200E	5
NODIALTONE	6	BUSY	7
NOANSWER	8	CONNECTxxxxx*	10
DELAYED	24	BLACKLISTED	32
FAX	33	DATA	35
+FCERROR	+F4		

NOTE: For x1, x2 , x3 and x4 the modem send this result code when the DTE speed is xxxxx bps

Section Eight - Specifications

Modulation std.:	V.90, K56flex, ,V.34, V.32bis, V.32, V.29, V.27ter, V. 22bis,V.23, V.22, V.21, V.17, Bell 212/103,
Compression:	V.42bis, MNP Class 5
Error Correction:	V.42, MNP Classes 2-4
FAX Command:	TIA/EIA 578 class 1
Transmit level:	-12 dBm +/- 1 dB (vary with country)
Sensitivity:	-43 dBm
UART:	16550 compatible
Power:	.75 W max
Temperature:	0 to 55 degrees C, operating; -20 to 80 degrees C, non-operating